CCS Technical Documentation
RH-12/RH-28 Series Transceivers

1 - General Information

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RH-12 and RH-28 Product Selection

The RH-12/28 (Nokia 6230) is a new triple band transceiver family. RH-12 is designed for the GSM900 (including EGSM), GSM1800, DCS1900 and PCS 1900 networks. The RH-28 is designed for the GSM850 (including EGSM), GSM1800, DCS1900 and PCS 1900 networks.

Table 1: RH-12 product and modules

Name	Type Code	Material Code / Module type	Module code
Basic transceiver Nokia 6230	RH-12	0509076	
Main system board		EZ4A	0201879
UI board Module		EZ4D	0275784
Mechanical assy parts			0262912
SW flash file			0243589

Table 2: RH-28 product and modules

Name	Type Code	Material Code / Module type	Module code
Basic transceiver Nokia 6230b	RH-28	0509517	
Main system board BOM II		EZ4A	0201975
UI board Module		EZ4D	0275785
Mechanical assy parts			0262938
SW flash file			0243707

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Accessories List

Batteries	Product code:
BL-5C Battery 850mAh Li-ion	0670400
Chargers	**Product code:**
ACP-7U CHARGER 3.7V/340MA US	0675143
ACP-7E AC TRAVEL CHARGER EU	0675144
ACP-7X TRAVEL CHARGER UK	0675145
ACP-7H TRAVEL CHARGER HONG KONG	0675146
ACP-7E AC TRAVEL CHARGER EU	0675171
ACP-7U AC TRAVEL CHARGER US	0675172
ACP-7X AC TRAVEL CHARGER UK	0675173
ACP-7AR TRAVEL CHARGER	0675244
ACP-7C TRAVEL CHARGER	0675158
ACP-7UR TRAVEL CHARGER US	0675160
ACP-8E TRAVEL CHARGER EURO	0675195
ACP-8U TRAVEL CHARGER USA	0675196
ACP-8X TRAVEL CHARGER UK	0675197
ACP-8J TRAVEL CHARGER JAPAN	0675198
ACP-8K TRAVEL CHARGER KOREA	0675199
ACP-8C TRAVEL CHARGER CHINA	0675211
ACP-8A TRAVEL CHARGER AUSTRALIA	0675214
ACP-8UB TRAVEL CHARGER	0675236
ACP-8G TRAVEL CHARGER	0675237
ACP-8AR TRAVEL CHARGER	0675248
ACP-8U TRAVEL CHARGER USA	0675269
ACP-8XV TRAVEL CHARGER UK	0675330
ACP-8EV TRAVEL CHARGER EU	0675331
ACP-8UV TRAVEL CHARGER US	0675332
ACP-8AV TRAVEL CHARGER AUS	0675333
ACP-8KV TRAVEL CHARGER KOREA	0675334
ACP-8CV TRAVEL CHARGER CHINA FO	0675359
ACP-9C AC FAST CHARGER CHINA	0675204

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ACP-9E AC FAST CHARGER EURO	0675149
ACP-9X AC FAST CHARGER UK	0675150
ACP-9U AC FAST CHARGER US	0675151
ACP-9A AC FAST CHARGER AUS	0675152
ACP-9J AC FAST CHARGER JPN	0675153
ACP-9UR AC FAST CHARGER US	0675159
ACP-9UJ AC FAST CHARGER US JPN	0675169
ACP-9UB AC FAST CHARGER BRA	0675224
ACP-9G AC FAST CHARGER BRA	0675225
ACP-12X TRAVEL CHARGER UK	0675296
ACP-12C TRAVEL CHARGER CHINA	0675297
ACP-12AR TRAVEL CHARGER ARGENTINA	0675298
ACP-12A TRAVEL CHARGER AUSTRALIA	0675300
ACP-12K TRAVEL CHARGER KOREA	0675301
ACP-12U TRAVEL CHARGER USA	0675303
ACP-12J TRAVEL CHARGER J	0675329
LCH-8 Cigarette Lighter Charger	
LCH-9 Cigarette Lighter Charger	0675120
LCH-12 Cigarette Lighter Charger	0675328
AC-1 RETRACTABLE CHARGER	
Wearables	
HDS-3 Stereo Headset	0694093
HDS-3 Stereo Headset China	0694109
HDB-4 Mono Headset	0694094
HS-5 Mono Headset China	0694108
HS-10 Headset retractable APAC	0694125
HS-10 Headset retractable EURAF	069416
LPS-4 Loopset	0630443

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Car Accessories	
Advanced HF CARK126 • Advanced Unit HFU-4 • Handset HSU-3 • HF Micr. HFM-8 • Holder (small size) MBC-15S • Coupler AXF-15S • System Cable SCU-4 • Mounting Plate MKU-1 • External HF Speaker HFS-12 • Power Cable (PCU-4)	0085197 0694103 0690016 0650041 0273723 0630471 0620036 0692009 0630478
BHF-1 Basic Handsfree	0694102
Other	
DCV-14 Deskstand (multiple size)	0675323
DT-1 Music Stand	0694119
DKU-2 USB (for internal USB driver)	0730238
HDA-10 TTY Adaptor	
SU-2 TV Dongle (BT) Europe 1 (east and north)	0274186
SU-2 TV Dongle (BT) Europe 2 (west and south)	0274187
SU-5 POP VIEWER	0274238 (Europe 1) 0274284 (Europe 2) 0274893 (Europe 3) 0274892 (Europe 4)
SU-4 PICTURE FRAME	0274728 (Europe 1) 0274729 (Europe 2) 0274840 (Europe 3) 0274841 (Europe 4) 0274730 (Europe UK)
SU-7 PICTURE FRAME	0274757 (Europe 1) 0274758 (Europe 2) 0274839 (Europe 3) 0274838 (Europe 4) 0274759 (Europe UK)
BT Accessories	
HS-3W BT Headset EURAF	0274161

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HS-4W BT Headset	
BT Handsfree CARK112 • BT Handsfree Unit HFW-1 • Power Cable PCU-4 • Control Button CUW-2	085192 0750135 0630478 0694077
DTL-4 Nokia PC BT Card	0750181
SU-1B BT Pen	0710000
CK-1W Europe 1	0080774
CK-1W Europe 2	0080774
CK-1W Americas	0080785
CK-1W APAC	0085218
CARKIT 610	

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Technical Specifications

General Specifications of Transceiver RH-12 and RH-28

Unit	Dimensions (mm) (L x W x T)	Weight (g)	Volume (cm^3)
Transceiver with BL-5C 850mAh Li-ion battery pack	103 x 44 x 20	97	76

Parameter	Unit
Cellular System	GSM900, EGSM900, GSM1800 and PCS1900
RX Frequency Band	EGSM: 925 - 935 MHz GSM900: 935 - 960 MHz GSM1800: 1805 - 1880 MHz PCS1900: 1930 - 1990 MHz
TX Frequency Band	EGSM: 880 - 890 MHz GSM900: 890 - 915 MHz GSM1800: 1710 - 1785 MHz PCS1900: 1850 - 1910 MHz
Output Power	GMSK EGSM900: +5...+33 dBm / 3.2mW...2W GSM1800: +0...+30 dBm / 1.0mW...1W PCS1900: +0...+30 dBm / 1.0mW...1W 8-PSK EGSM900: +5...+27 dBm / 3.2mW...2W GSM1800: +0...+26 dBm / 1.0mW...1W PCS1900: +0...+26dBm 1.0mW...1W
Number of RF Channels	EGSM: 124 GSM1800: 374 PCS1900: 300
Channel Spacing	200 kHz
Number of TX Power Levels	GSM900 *: 15 GSM1800: 16 PCS1900: 16

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Battery endurance

Nokia measurements of the operational times in GSM 900/1800 are:

Talk time with battery BL-5C	
Talk time variations	Up to 180 - 300 min
Integrated Handsfree (IHF) talk time	Up to 130 min
Stand-by time	Up to 300 h
Radio + HDS-3	Up to 20 h

Nokia measurements of the operational times in GSM 850/1900 are:

Talk time with battery BL-5C	
Talk time variations	Up to 180 - 300 min
Integrated Handsfree (IHF) talk time	Up to 130 min
Stand-by time	Up to 300 h
Radio + HDS-3	Up to 20 h

Variation in operation times will occur depending on SIM card, network settings and usage. When testing MS battery life, it is initially assumed that the MS is a single band MS operating with the GSM FR speech codec, GPRS/EGPRS is not active.

Environmental conditions

Environmental condition	Ambient temperature	Notes
Normal operation	-10 °C ... +55 °C	Specifications fulfilled
Reduced performance	+55 °C ... +65 °C	Operational only for short periods
Intermittent operation	-20 °C ... -10 °C and +65 °C ... +85 °C	Operation not guaranteed but an attempt to operate will not damage the phone
No operation	-40 °C ... -20 °C	Operation not possible but an attempt to operate will not damage the phone
No operation or storage	< -40 °C and > +85 °C	No storage; an operation attempt may cause permanent damage
Charging allowed	-25 °C ... +60 °C	
Long term storage conditions	0 °C ... +40 °C	

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Transceiver Features

Main HW/features include:

- EDGE MSC 10
- GPRS MSC 10
- Active TFT color display 128x128 - 65 536 colors
- Integrated Camera - VGA 640x480
- MMC Multimedia card support
- Douglas style UI with 5-way navigation
- Integrated Handsfree IHF speaker
- Digital camcorder - record and playback
- Streaming video incl. AMR (audio)
- Bluetooth - incl. SIM Access Profile (SAP), SyncML, file transfer profiles
- MMS OMA 1.0
- Java MIDP 2.0 with BT, SMS, MM API (audio only)
- XHTML/WAP2.0 browser
- Presence/Dynamic phone book - Wireless Village
- E-Mail client (Java based)
- Digital music player for MP3 /AAC music formats
- FM Stereo Radio
- MIDI support - 24 polyphonic

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Electrical Characteristics

Table 3: Absolute Maximum Ratings

Parameter	Min.	Typical	Max.	Unit
Battery Voltage	3.145	3.7	4.23	V
Charger Input Voltage	0		16	V
Charging Current	0		0.85	A

Table 4: Current Consumption

Condition	Min.	Typical	Max.	Unit
Call (MoU) EGSM 900 DCS 1800 PCS 1900		 208 188 168		 mA
Idle (MoU)		2.72		
Power off	150		250	mA

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